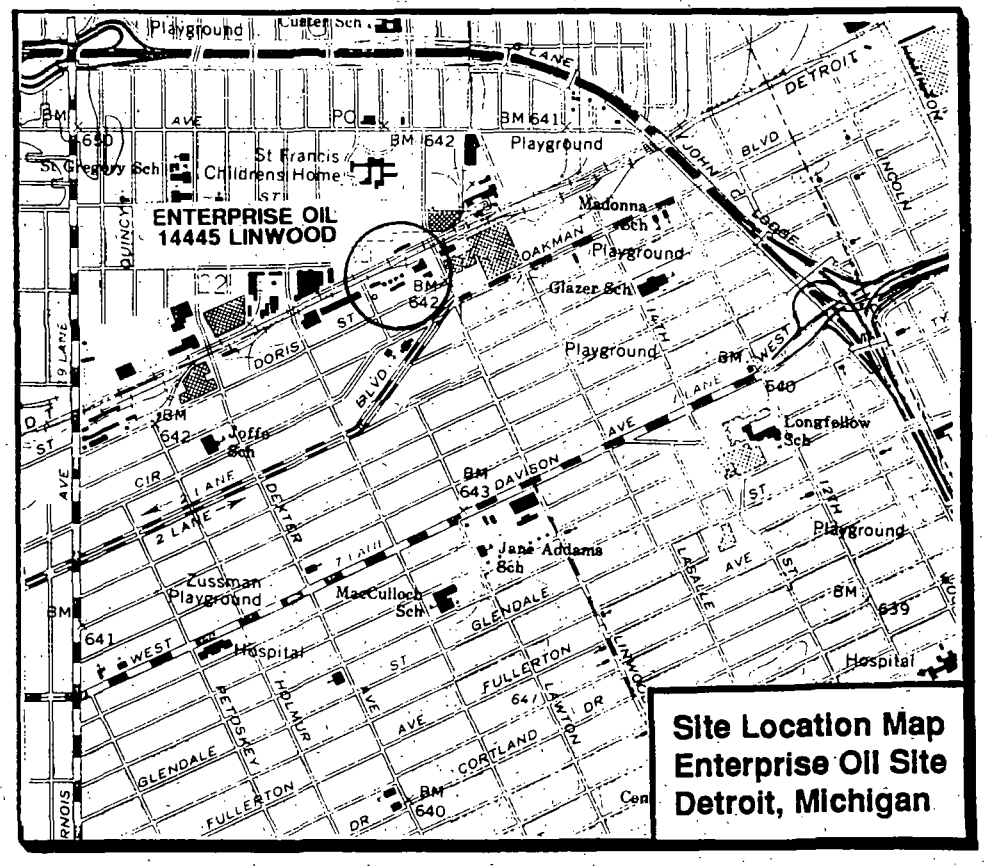
United States
Environmental Protection
Agency

Office of Public Affairs
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Illinois Indiana
Michigan Minnesota
Ohio Wisconsin

Superfund Fact Sheet

Enterprise Oil Site
Detroit, Michigan
August 1992



THIS FACT SHEET WILL TELL YOU ABOUT . . .

- o The history of the site.
- o The removal action at the site.
- o How you can obtain more information about the site.

Information Repository

For more information concerning the Enterprise Oil site, you may consult the information repositories at the following locations:

Francis Parkman Branch
Detroit Public Library
1766 Oakman Blvd.
Detroit, MI

Dexter-Fullerton
Neighborhood City Hall
12512 Dexter
Detroit, MI

INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) is the federal agency that helps to develop and oversee the government's environmental policies. U.S. EPA is responsible for investigating hazardous contamination throughout the nation, and for overseeing the clean-up of that contamination. In 1980, the Superfund program was created, authorizing U.S. EPA to respond to releases of hazardous substances, pollutants, and contaminants into the environment.

U.S. EPA has several internal programs to manage the complex task of cleaning up contaminated sites under Superfund. One of these programs, the Removal Program, was created to respond to emergencies involving hazardous substances, pollutants, and

contaminants. The Removal Program was designed to minimize or eliminate any immediate danger when hazardous materials threaten to contaminate the air, soil, or water and endanger human health. In a typical U.S. EPA removal action, the contaminants are removed from the area for treatment or disposal in a safe and approved manner. In some removal actions, the danger can be removed by treating the contamination at the site.

This fact sheet provides information about a U.S. EPA removal action that is taking place at the Enterprise Oil site in Detroit, Wayne County, Michigan. Words highlighted in **bold** type are defined in a glossary on page 5.

SITE DESCRIPTION

The Enterprise Oil site is located at 14445 Linwood Avenue, Detroit, Michigan, in a mixed residential, commercial, and industrial area. It is bordered by Linwood Avenue on the east, and is situated behind an abandoned gas station. (The closing of this gas station is not related to the actions at the Enterprise Oil site.) An industrial facility is west of the site, and Conrail railroad tracks border the site on the north. An elementary school, a playground, and a home for mentally handicapped and orphaned children are situated north of the railroad tracks. A residential neighborhood is located within 100 feet of the site's southern boundary.

The site is a 3.1-acre property that was used as a facility for storing waste oil until 1988. Sixteen aboveground tanks, holding over 1.3 million gallons of oil, and thirteen underground storage tanks with a combined storage capacity of 152,000 gallons were located on-site. Several buildings are located on the property, including maintenance garages, an office building, and a building that formerly contained a laboratory. Access to the property is restricted by a chain-link fence.

SITE HISTORY

The Enterprise Oil site operated from 1956 until 1975 as a petroleum distribution facility. Substances such as kerosene, gasoline, fuel oil, and jet fuel were stored for distribution for commercial and private use. In 1975, the facility began receiving and storing waste oil from the automotive industry. The facility was sold to the current owner of the property, Motor Oil Refining Company (MORECO), in March 1988. MORECO continued to operate the facility under the Enterprise Oil name. The company used the tanks for storage of waste oil. MORECO closed the facility in December 1988. The company removed most of the waste oil from the tanks and ceased operations at the property. A fence was the only means of security.

Between April 1990 and July 1991, repeated incidents of vandalism occurred at the site. The Detroit Fire Department responded to several reports that vandals had removed valves from the aboveground storage tanks, resulting in the release of significant amounts of waste oil. This waste oil flowed into a concrete containment structure with a soil floor. The oil then seeped under the concrete containment wall and flowed beneath the Conrail railroad tracks north of the site.

The Detroit Fire Department notified the Detroit Department of Community and Industrial Hygiene (DCIH) of these incidents. DCIH in turn reported the incidents to the Michigan Department of Natural Resources (MDNR). MDNR representatives contacted MORECO, requesting the company to begin an immediate clean-up at the site. MORECO responded by removing all of the waste oil that had been released into the containment structure, as well as a portion of the waste oil that had spread off-site. As part of the clean-up, MORECO transferred this waste oil to a local oil recycling facility. Results of a chemical analysis of the oil showed that it was contaminated with a high level of **chlorine**-containing chemicals.

In July 1991, MDNR conducted an inspection of the facility as MORECO proceeded with the clean-up. Following this inspection, MDNR issued a letter, requesting that MORECO remove all remaining contamination at the site within 90 days. MORECO filed for bankruptcy in June 1991, and did not comply with this request. MDNR contacted U.S. EPA on August 21, 1991, and asked that U.S. EPA begin a removal action at the site.

U.S. EPA conducted an assessment of the facility to evaluate the conditions. During the assessment, U.S. EPA noted that the soil had been contaminated by the releases of waste oil. U.S. EPA representatives also observed approximately 50 drums containing chemical substances that had been dumped at various locations throughout the

property. Many of these drums were on their sides and appeared to be leaking. Representatives of U.S. EPA collected samples from several of the drums, as well as samples of waste oil and contaminated soil. Analysis of these samples revealed unusually high levels of chemical solvents and substances from a specific chemical category, **volatile organic compounds**. These substances are known to be hazardous to humans.

In September 1991, MORECO agreed to continue clean-up activities under U.S. EPA supervision. Between October 1991 and February 1992, MORECO conducted removal actions on a limited basis, removing some drums of chemicals and small quantities of waste oil, and constructing several control devices to prevent any further contamination from spreading off-site. In December 1991, U.S. EPA issued an order requiring MORECO to take additional actions to clean up the Enterprise Oil site. MORECO stated that it was unable to continue the clean-up of the site, and on February 28, 1992, all removal activities stopped.

The waste oil that remained in the oil storage tanks at the site continued to present a threat because of the possibility that future acts of vandalism might cause additional releases of waste oil. The hazardous substances in drums and small containers also presented a danger because of the lack of security at the site. The site's close proximity to a residential neighborhood, an elementary school, and a playground also presented dangers to the surrounding community. U.S. EPA considered these factors and determined that the substances remaining at the site posed a danger and threat to human health and the environment. The site was then considered for an emergency removal action under the Removal Program of **Superfund**. U.S. EPA then took over the clean-up of the site.

ACTIONS TAKEN

On June 16, 1992, U.S. EPA arranged for 24-hour security at the site and began to set up equipment for the removal action. Non-hazardous debris was removed. Technicians sampled all drums and containers to determine whether the contents were hazardous. Workers then removed all of the oil storage tanks from the site. Waste oil and sludge was removed from the bottoms of the tanks. The waste oil and sludge was then consolidated in secure containers. Workers cleaned the tanks with a high-power washer and cut the tanks into pieces. Scrap metal from these tanks is being shipped off-site by a metal recycling company.

CURRENT AND UPCOMING ACTIONS

Phase I of the removal action, the removal of tanks and other containers and their contents, was completed in early August 1992. U.S. EPA is making arrangements for off-site disposal of the other hazardous substances from the site.

Phase II of the removal at the Enterprise Oil site will involve treating the contamination that remains in the soil and the consolidated waste oil and sludge. This phase is scheduled to begin in September 1992. A large amount of the soil at the site was contaminated by the waste oil that was released from the aboveground oil storage tanks during past spills.

Following the removal of all oil storage tanks from the site, U.S. EPA will conduct an extent-of-contamination (EOC) study at the Enterprise Oil site. The purpose of the EOC study is to determine the areas of soil contamination, the depths to which the soil has become contaminated, and the concentrations of the contaminants. U.S. EPA technicians will collect samples of the soil from the entire site. Soil from contaminated areas will be excavated and placed in the area where the aboveground storage tanks were located. U.S. EPA representatives plan to place the contaminated soil inside the walls of the concrete containment area, where it will be treated using a technology called bioremediation (see page 4 for a detailed discussion of bioremediation technology). U.S. EPA representatives are reviewing the proposals of several companies that specialize in bioremediation to select a contractor to perform this phase of the removal action. The company that is selected will conduct a series of treatability studies, using samples of the contaminated soil. The studies will help to determine which method of bioremediation will be most appropriate for treating the soil at this particular site. Once the treatment is underway, it is expected that clean-up of the oil-contaminated soil will take approximately one year to complete.

WHAT IS BIOREMEDIATION?

Bioremediation is a process that uses naturally occurring microorganisms (yeast, fungi, or bacteria) to break down harmful chemicals into less toxic or nontoxic substances. Microorganisms, like all living organisms, need food to survive and grow. Microorganisms use a wide variety of natural organic (carbon-containing) substances as food. Certain microorganisms can digest organic substances that are hazardous to humans, such as oil and other petroleum products. As the microorganisms digest these substances, the hazardous substances are broken down into harmless byproducts, mainly carbon dioxide, water, and fatty acids. Bioremediation harnesses this natural process by promoting the growth of microorganisms that can digest contaminants and convert them into non-hazardous substances. Use of these microorganisms at a hazardous waste site can be a very effective method of removing contaminants from the soil.

Different microorganisms digest, or degrade, different types of substances, and they require different conditions in order to survive. For bioremediation to be effective, the microorganisms must be able to grow quickly and reproduce themselves at the site. In addition to the food source provided by the presence of organic contaminants, some microorganisms need to be supplied with additional nutrients. Other microorganisms require certain levels of moisture, oxygen, and heat in order to survive and grow. Therefore it is sometimes necessary to adjust soil conditions to ensure that the microorganisms will grow quickly on their "diet" of contaminated soil.

In many instances, technicians can modify the environmental conditions at a site to make the process more effective. To accomplish this, samples of the contaminated soil are collected and analyzed to find out what types of microorganisms are present in the soil naturally, and also to determine what conditions and additional nutrients may be needed by those particular microorganisms. For example, if the soil at the site does not contain enough nitrogen or phosphorus, these nutrients can be added to the soil to promote the growth of the microorganism at the site. As another example, if the soil contains too much of the hazardous substance, a large amount of clean soil can be added to dilute the concentration of the waste in the soil. The microorganisms will then be able to feed upon the waste, and the bioremediation process can proceed at that site.

Sometimes the microorganisms that naturally digest a particular contaminant are not present in the soil at a hazardous waste site. These microorganisms do occur naturally at other locations, however. In these instances, the necessary microorganism can be added to the soil at the site. Again, analysis of soil samples from the contaminated site will help technicians to adjust the conditions of the soil and promote the growth of the newly added microorganism.

As the microorganisms feed upon the hazardous substances, they grow and reproduce throughout the soil, eventually removing the contamination as they digest and degrade the substances. Once the contamination at a site has been completely degraded by this process, most of the microorganisms will die because they have used up all of their food source. The dead microorganisms do not present a risk of contamination because they have already degraded the soil's contaminants into harmless substances. Because the microorganisms die off once the soil treatment process is completed, bioremediation does not permanently affect the composition of the soil at a site.

GLOSSARY

Administrative Record (AR) - A compilation of documents that U.S. EPA either considered or relied upon in selecting removal or remedial actions to be taken at a Superfund site. U.S. EPA is responsible for placing the AR at a location near the site for review by the public.

chlorine - a component of many chemical solvents that is highly irritating if breathed. Many chemicals that contain chlorine at high concentrations are considered hazardous substances under federal regulations. (The concentration of chlorine in chlorine bleach is very low.)

Superfund - The common name used for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Enacted in 1980, Superfund authorizes the federal government to respond directly to releases of hazardous substances that may endanger public health and the environment. Depending on the level of threat or potential threat posed by the hazardous substances, U.S. EPA will initiate either a removal action (for emergency situations) or a remedial action (long-term evaluation and preparation for clean-up at sites where contaminants do not present an immediate threat).

volatile organic compounds - a family of chemicals composed of carbon and hydrogen that readily evaporate from liquids to gases when exposed to air. Examples of these substances include lighter fluid and paint thinner.

MAILING LIST

If you wish to be placed on the mailing list for the Enterprise Oil site, please complete this form, detach, and mail to:

Lawrence Leveque (P-19J)
Community Relations Coordinator
U.S. EPA Office of Public Affairs
77 West Jackson Boulevard
Chicago, IL 60604

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE (_____) _____

AFFILIATION _____

FOR MORE INFORMATION

For more information about the Enterprise Oil site, you may contact the following U.S. EPA representatives:

Lawrence Leveque (P-19J)
Community Relations Coordinator
U.S. EPA Office of Public Affairs
77 West Jackson Boulevard
Chicago, IL 60604
312-886-4359

Pete Guria
On-Scene Coordinator
U.S. EPA EERB, Response Section I
9311 Groh Road
Grosse Ile, MI 48138
313-692-7660

United States Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604
Toll-free Number: 800-621-8431 (Central Time)

U.S. EPA has set up an Information Repository for the Enterprise Oil site at two locations. The repositories contain a collection of documents, including the **Administrative Record**, site-related technical documents, fact sheets, press clippings, and U.S. EPA information concerning Superfund and the Removal Program. Locations and hours of the repositories are as follows:

Francis Parkman Branch
Detroit Public Library
1766 Oakman Blvd.
Detroit, MI 48238
Phone: 313-876-0132
Summer Hours: 1 - 5 p.m.

Dexter-Fullerton
Neighborhood City Hall
12512 Dexter
Detroit, MI 48206
Phone: 313-876-0419
Hours: 8:30 a.m. - 5:30 p.m.

EPA

U.S. Environmental Protection Agency
Region 5
Office of Public Affairs (5PA-14)
230 South Dearborn Street
Chicago, IL 60604